Journal of the Royal Society of Arts

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BROADCAST FROM THE SOCIETY'S HOUSE

Fellows of the Society are again to have an opportunity of taking part in a discussion programme which is to be broadcast in the General Overseas Service of the B.B.C. The discussion, which will be recorded in the Society's Lecture Hall at 8 p.m. on Wednesday, 28th September, is part of a series entitled *Serious Argument*, in which questions on topics of international and domestic importance which have been in the headlines during the previous week are raised by members of the audience, and on this occasion they will be discussed by Lord Hailsham and Woodrow Wyatt, M.P., with Robert Mackenzie in the Chair.

Fellows are invited to apply for tickets of admission for themselves and not more than two guests, not later than Monday, 19th September.

MARKET RESEARCH CONFERENCE

The Society has arranged a conference, on the subject of 'Market Research—fact-finding as a practical aid to overseas sales', which will be held in the Lecture Hall on Tuesday, 15th November, 1955. The Council has been prompted to hold this conference by the vital need to improve Britain's export trade, and the specific subject of market research has been selected because of the Council's belief in the valuable contribution which market research can make in this matter at the present time.

The conference is receiving the official support of the Association of British Chambers of Commerce, the British Export Trade Research Organisation (1952) Ltd., the Federation of British Industries, the Institute of Export, and the National Union of Manufacturers.

The proceedings will last one full day: in the morning session a paper will be read on the general position facing exporters at the time of the conference by Mr. Lincoln Steel, Chairman of the British National Committee of the International Chamber of Commerce and Chairman of the Overseas Trade Policy Committee of the Federation of British Industries, and on the contribution which market research can make by Mr. Martin Maddan, M.P., whose recent book, *Profitable Export Marketing*, was reviewed recently in the *Journal*. There

will then be a discussion on these papers. In the afternoon session, two case histories of successful applications of market research in different industries will be described, followed first by a discussion on them, and then by a 'brains trust' which will endeavour to clarify any points which may have arisen during the day.

The conference is intended to interest primarily people able to influence directorial policy, who may not yet be fully aware of the value of market research.

Applications for tickets of admission to the conference should be made to the Secretary before 15th October, 1955. As space is limited it may be necessary, if the object of the conference is to be achieved, to give priority in the allocation of seats to those having an immediate interest in export problems, and it will be appreciated if Fellows who might wish to attend would state on their applications whether they have such an interest. Further details of the arrangements for the conference will be announced in the *Journal* nearer the date.

F.B.I. OVERSEAS SCHOLARSHIPS

The Federation of British Industries has asked the Society to give what help it can towards the broadening of experience of F.B.I. Overseas Scholars undergoing practical training in the United Kingdom. These Scholars are engineering graduates from Commonwealth countries (excluding Canada), Latin-America, and other developing countries in Asia and Africa. They are chosen as being potential leaders and they spend a scholarship period of up to two years in engineering works in this country. The scheme has the support of H.M. Government.

It is desirable that they should return home appreciative of the British way of life. If any Fellow of the Society feels able at any time to give helpful introductions to one or more of the F.B.I. Scholars in his area or would be willing to meet them in a purely social way, full details will be provided on application to Vice-Admiral Sir Sydney Raw, K.B.E., C.B., Federation of British Industries, 21 Tothill Street, Westminster, S.W.1.

THE PLANNING OF ROADS

A paper by

E. W. H. VALLIS, F.R.I.C.S., M.I.Mun.E., L.R.I.B.A.,

County Surveyor of Kent, read to the Society on Wednesday, 11th May, 1955, with E. Munro Runtz, F.R.I.C.S., Chairman of Council of the Society, in the Chair

THE CHAIRMAN: Some time ago I asked to be allowed to take the Chair to-day, because I suggested that Mr. Vallis should be invited to read a paper on the planning of roads. It is a pleasure to introduce him because of his position and his knowledge of the matters concerned.

For the past forty years, governments have pursued a policy, in my opinion, of 'penny wise, pound foolish' with respect to road and street construction and reconstruction. God knows as a result of this folly what it has cost us in lives, injuries and money. The sooner we decide to consult a wise surgeon the better, but like all major operations, except those under the Health Service, it must cost a great deal of money.

The following paper, which was illustrated with lantern slides, was then read:

THE PAPER

Stripped of all the complications which envelop and disguise it, the core of road planning emerges as a straightforward problem in dynamics. It is not to be supposed from that remark that the process as a whole bears any resemblance to an exact science. No doubt technical problems abound, but human and administrative problems enter into it too; indeed, they are usually the more numerous and intractable, and it is to them that most of our time will be devoted.

Yet, although pure mathematics and pure science are rarely the direct concern of the engineer engaged in road planning, all his work is ultimately founded on them. It is difficult to imagine any object more static than a road, and at first glance my assertion that it is fundamentally a dynamical problem may appear something of a paradox. But the engineer's object is to build a road which will carry vehicles safely at any speed up to a predetermined maximum known as the design speed. Those vehicles are masses which have finite though continually varying velocities and directions. The Laws of Motion which were put into formal shape by Newton in his *Principia* bind them as securely as they bind the theoretical particles of the mathematician's text-book. There is no escape. It is true that on the road the moving masses are machines controlled by fallible human brains and muscles which too often ignore the natural laws and attempt to defy them; the engineer can take no such risks. No matter what difficulties lie or are placed in his way, his road must provide a path which not only looks safe but is safe, in the sense that a vehicle can travel along it

at any speed up to the design speed without its driver being lured into any attempt to defy the natural laws. Translated into practical terms, this means that his road must conform to certain fairly rigid requirements, among which standards of horizontal and vertical curvature, and of gradient, are of prime importance.

If I seem to have laboured these elementary points I have done so because they must never be lost sight of among all the other problems and processes, technical and procedural, some of which we are going to examine and all of which have to be solved and observed before the engineer can give his whole mind to the engineering operations which are his natural province. They also explain why the engineer is so unaccountably reluctant to move the carefully located line of his road a few yards one way or another to satisfy the objector who makes this apparently reasonable demand. The adjustment which looks so simple and unimportant may set off a whole chain of adjustments which, before they die out, may affect a mile of road.

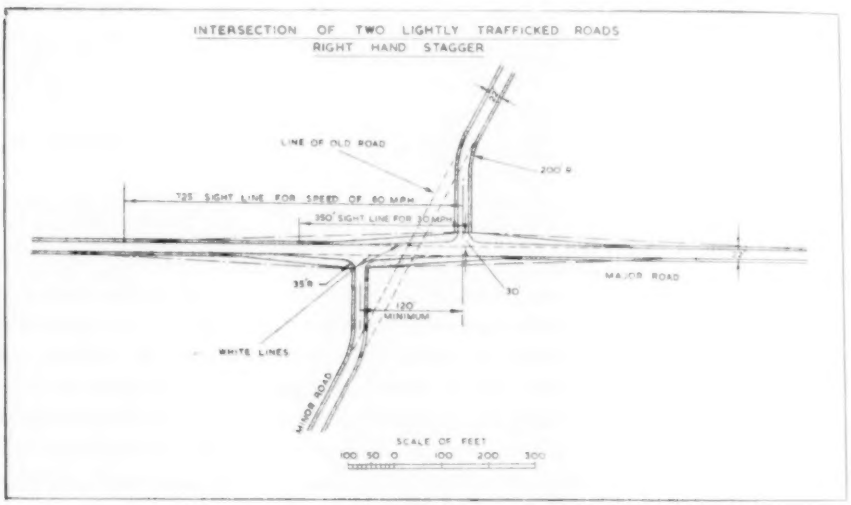

FIGURE 1

Although much of the engineering design of a road comes at a later stage, when the precise location has been settled, I think it may be convenient to advance our consideration of this part of our subject and to deal with it now. We have just seen that some features of the design must be in the forefront of the engineer's mind from the very beginning; if it were otherwise, his road would wholly fail to perform the functions for which it was needed. Of only less importance is the need to keep in his mind many other details of engineering design; if he does not do so, he will later find himself faced with numerous practical difficulties which could have been avoided, or any rate would have been easier and cheaper to overcome, if they had been foreseen and guarded

against earlier. From the beginning the road must, in the mind's eye, be complete and alive with traffic; let us now see quite briefly, and without discussion of the technical principles concerned, some of the elements of engineering design which affect its planning.

The road must not have the appearance of a scar slashed across the countryside; it must be pleasing to the eye. By careful engineering design, for instance, the harsh monotony of numerous parallel lines can be largely avoided. Thus dual carriageways may be constructed on different levels and slightly different alignments, and ground levels favourable to this treatment will be looked for.

The bearing capacity of the subsoil, as ascertained by a soil survey, must be high enough to allow of the carriageway structures being designed to a specification which is at once safe and economical. The minimum overall effective width of the road will already have been determined by the traffic which the road is intended to carry. Changes of direction must be effected by curves of a specified minimum radius, approached at each end by spiral or other transition curves. This imposes severe limitation on changes of direction which form reverse curves.

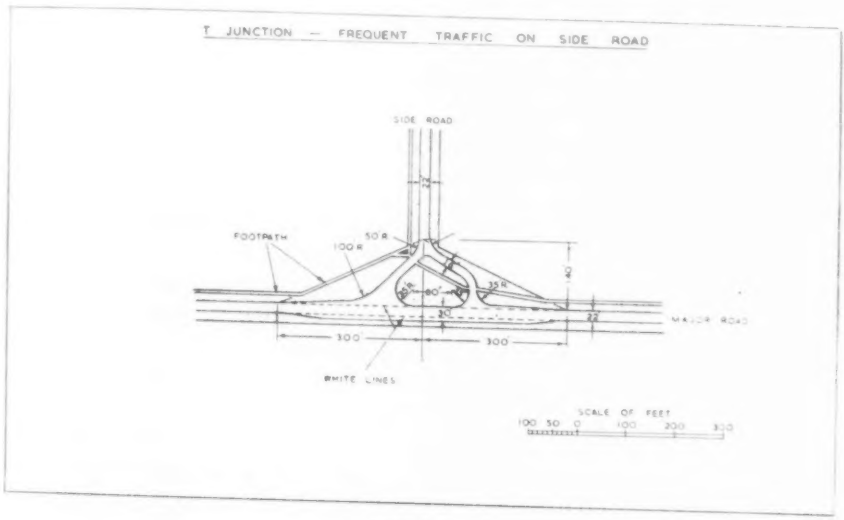

FIGURE 2

Gradients must be limited to a specified maximum. Changes of gradient must be effected by vertical curves, a specified minimum visibility distance must be provided over crests, and vertical curves must be carefully positioned in relation to horizontal curves. Deep cuttings and embankments will be avoided where possible, and efforts will be made to balance earthworks by making the volume of cuttings equal to the volume of embankments, with an economical haulage distance of excavated material. Surface water will require natural watercourses within easy reach if they are available, otherwise the subsoil must be suitable for disposing of the water by means of soakaways.

Communication between the parts of severed properties must be provided by suitable means such as cattle creeps. Intersecting roads must be dealt with by one of the following methods, chosen according to the importance of the road and to the necessity of maintaining the safe and free flow of traffic on one or both of the roads: stopping up; stagger; roundabout, or flyover.

If, by a happy series of favourable circumstances, a road conceived to-day could pass without delays or reverses through the procedure in force at the present time, its course would be generally along the following lines:

1. Approval in principle by the Highway Authority.
2. Approval in principle by the Minister of Transport and Civil Aviation.
3. Tentative route located.
4. Consultation with other bodies concerned.
5. Approval by the local Planning Authority.
6. Submission to the Minister of Housing and Local Government for inclusion in the Development Plan.
7. Plan advertised and made available to the public.
8. Minister holds public inquiry into objections lodged by interested persons.
9. Minister approves, and includes in plan.
10. Precise route located.
11. If a trunk road, further publication and inquiry.
12. Engineering drawings prepared.

It is evident that most of these stages are procedural rather than technical, but the work of the engineer is the one thread which runs through them all, and he is in varying degree concerned throughout. At the public inquiry, for instance, he is in demand in a new role: that of witness. During these proceedings he will be submitted to searching cross examination in the course of which he will have to demonstrate the need for the road; the reasons why the route is located where it is located; and the reason why alternative routes suggested by objectors are not acceptable. (The probability is that he had already investigated all the reasonable alternatives before he advised the Highway Authority to adopt the one which is causing the trouble.)

It would give me deep satisfaction if I could present this orderly sequence of events to you as a fair picture of what actually happens. Unfortunately that would be unrealistic, because no major road scheme now ready to start has in fact been confined to that sequence, and it cannot be denied that its progress has been much less neat and orderly. To understand why that should be, we must look at some of the vicissitudes of administration and of procedure to which roads have been subject.

Until towards the close of the last century, each parish was responsible for the roads within its own boundaries. No doubt this served well enough when a journey of more than a few miles was exceptional, but it had obvious disadvantages as more extended travelling habits began to grow. The institution of turnpikes about the middle of the eighteenth century was an attempt to remedy this state of affairs, but it was only towards the end of the nineteenth century that an elected public body became responsible for substantial lengths

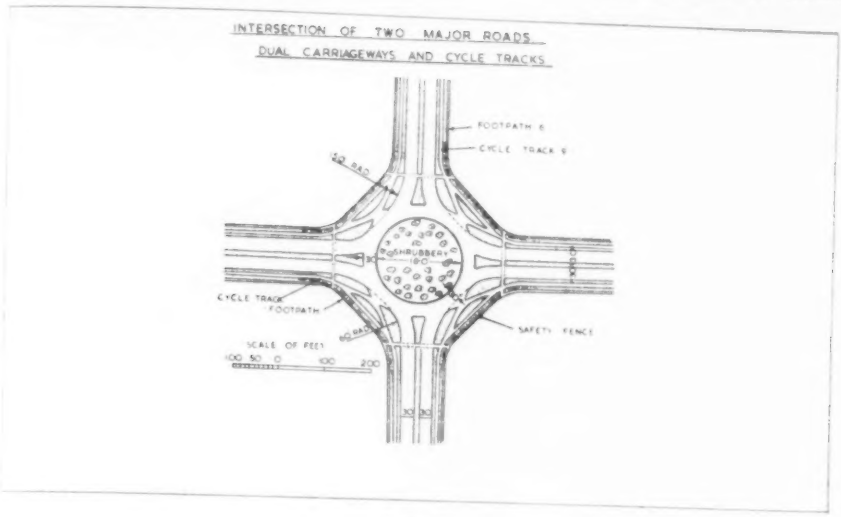

FIGURE 3

of road. This was brought about by the creation of the class of 'main roads', the definition of which included 'a medium of communication between great towns', and these 'main roads' were made the responsibility of County Councils. The institution of the Road Board in the early years of the present century was a further advance, but it was not until less than twenty years ago, when trunk roads were instituted, that a single highway authority, in the person of the Minister of Transport, became responsible for what were described in the Act as 'the principal roads in Great Britain which constitute the national system of routes for through traffic'.

Now, a moment's thought will show that it is not enough that a highway authority should extend over a wide area and be responsible for long lengths of road. That would enable a satisfactory plan to be made on paper, but in the nature of things a road programme must take many years to translate into real roads. It is of little use to plan a road unless its route can be kept clear of buildings and other artificial obstructions until the time when its construction can be started.

Until twenty years ago the only ready way of safeguarding a route was to buy any land which was threatened by development, a method which was both cumbersome and unsatisfactory. Then highway authorities became possessed of powers which enabled them to safeguard a route by administrative methods. These powers were supplemented on the advent of trunk roads by a special procedure laid down for those roads.

The Town & Country Planning Act, 1947, repealed the earlier procedure. It substituted general control of all development and enabled highway authorities to have their road proposals included in the development plans which the local Planning Authorities were required by the Act to prepare. That is the position

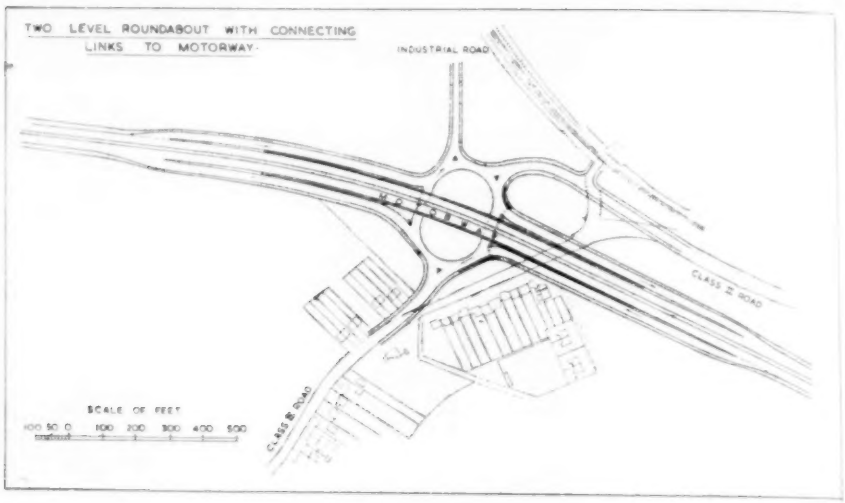
TWO LEVEL ROUNDABOUT WITH CONNECTING LINKS TO MOTORWAY
INDUSTRIAL ROAD
CLASS II ROAD
CLASS III ROAD
SCALE OF FEET
100 50 0 100 200 300 400 500

FIGURE 4

to-day. It is to be noted, however, that the special procedure for trunk roads still obtains, with the result that a proposed trunk road can be attacked twice: once under general planning procedure and once as an individual project under trunk road procedure.

We have now reached the stage where great lengths of road can be planned by one authority, and where the planned routes can be efficiently safeguarded. One further development remains to be described, and its importance can hardly be over estimated. Until recently (with rare exceptions such as a subaqueous tunnel constructed under a special Act) any highway constructed with public funds was open to all. Every class of traffic—pedestrians, pedal cyclists, and horse-drawn vehicles—could use it equally with the largest and heaviest commercial vehicles and the fastest cars. The disastrous results of there being such a wide range of users are too well known to need description. Now, with the advent of an Act passed only a few years ago, there are powers 'to provide for the construction of roads reserved for special classes of traffic'. At last, then, we can plan a road which may be some hundreds of miles in length, under the control of a single authority, designed on most modern lines specially suited to mechanically propelled vehicles, and reserved for use by them alone.

When I say that many roads yet to be built were planned more than a quarter of a century ago, and that in the intervening years they have been subjected to several of these procedural vicissitudes, it will be readily understood why I hinted that the orderly table of stages through which a road proposal would pass was in practice academic rather than real. Before we pass on to see how our present powers are being used, it may be as well to pause for a moment to look at some of their effects, and at other general considerations which affect road planning.

The development plan has one effect which was probably unintended: it provides opportunity for objecting not only to road proposals made public for the first time in the plan, but equally for objecting to proposals of long standing which had been subjected to the closest scrutiny on earlier occasions and which had received full protection under earlier legislation. At least one proposed trunk road which had already survived a public inquiry and for which a Trunk Road Order had been made has to my knowledge been attacked to such effect that the possibility of the Order being rescinded and a new route substituted cannot be ruled out.

A question which demands most earnest and careful attention is the length of the future period for which we can justifiably plan. Many of our present road problems would not have arisen if the requirements of our time had been foreseen and provided for in the past. We are correspondingly grateful when we do encounter foresight such as was shown by that great road engineer, Sir Henry Maybury, who, when making and reconstructing major roads in Kent after the 1914–18 war, provided additional width in anticipation of the further improvement which is now becoming necessary.

To plan a future road effectively means spending money now; it means that other development, desirable in itself, may have to be abandoned or to be so modified that it is less in accordance with present desires; it sometimes causes great hardship to individuals. Once a published proposal is seen to affect a particular property, even if the effect is remote in time, that property may be difficult or almost impossible to sell at the price it would previously have commanded, because mortgagees are reluctant to advance money on the security of the property.

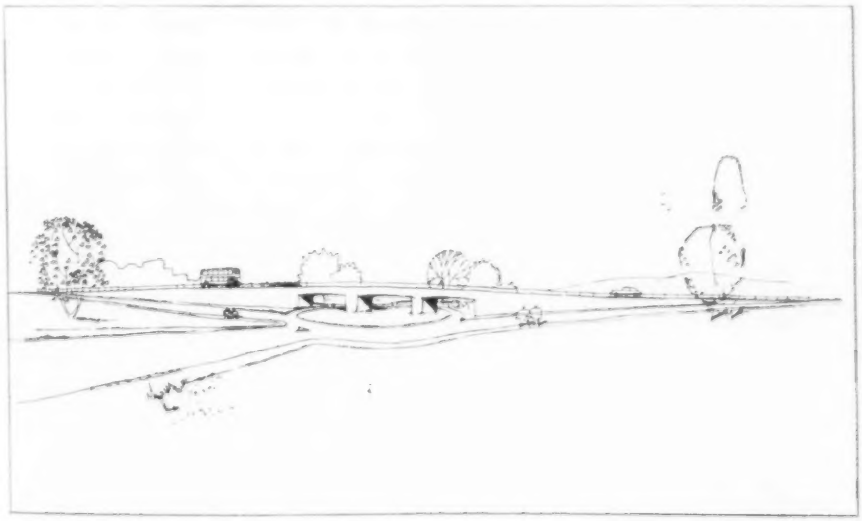

FIGURE 5. *Perspective view of layout shown in* Figure 4

If, however, a fairly long view is not taken, those who come after us will find themselves in difficulties as great as, and perhaps greater than, those which we are encountering. The question is, therefore, what sacrifices are we under an obligation to make for the benefit of our successors, to enable them to build a road which we can clearly see they will need? Fortunately for the engineer that is a problem which he is not called upon to resolve. His task in this particular direction is done when, after exhaustive technical investigation, he has advised his employers that the road will become necessary.

Mechanical advances are making ever higher speeds possible, and the desirability or otherwise of planning roads to take advantage of them needs some examination. The attainment of high speed by other forms of transport—air, sea, and rail—is not condemned. On the contrary, it is applauded as are efforts to attain still higher speeds. On roads alone is speed condemned. The reason, of course, is the shockingly high number of accidents, many of which are, rightly or wrongly, attributed to speed. This should not blind us to the desirability of attaining high speeds on long road journeys, if they can be attained with safety. It is of the greatest importance to remember that the overwhelming majority of accidents occur on roads which are totally unfitted for present-day traffic; roads which have only a single carriageway for traffic in both directions, and which are used by pedestrians and pedal cyclists as well as by heavy and fast-moving vehicles. These roads are in no way comparable with the dual-carriageway motor roads which are now contemplated, and roads of this modern type, the design of which is founded upon all the accumulated technical knowledge and skill now available, can justifiably be planned for speeds considerably higher than those to which we are accustomed to-day.

Although financial considerations play a dominating part in deciding when the actual construction of a road is to begin, they also play some part in the planning stage, as, for instance, when it has to be decided whether an existing road shall be improved, or whether a new road should be built to replace it. This, of course, is no new problem, as is well illustrated by an old map which I have been looking at. The association of your Society with Maidstone through William Shipley and the Romney family makes it particularly fitting that I should mention this map. It reposes in Maidstone Museum and was drawn in the first years of last century, probably soon after your founder's death. It concerns a proposal to make a new principal road approach to Maidstone. The superscription of the map reads:

> A CORRECT SURVEY of a part of the present TURNPIKE ROAD leading from MAIDSTONE to ASHFORD, showing by the Yellow Lines the intended new Cut and Branch Roads; and—in the event of the Public being determined (notwithstanding they may do it at a wanton expenditure of Public Money) to have the principal entrance into Maidstone from Ashford at East Lane—then showing by the short RED LINE an improved Cut which would easily connect the intended new Cut from the Otteridge Farm, with the present Turnpike Road near Millgate entrance Gate; and which red line or improved Cut was expressed by The Right Honble. The Earl of Romney, and N. R. Toke, Esqr. (the Chairman of the Road Meetings) when acting as a Committee upon the Ground, to be the only Cut by which the Public would be benefited.

If the writer of those words could return and see the traffic now carried by the road which he so roundly condemned (for, fortunately for later generations, the whole scheme was constructed) he might feel a little abashed on seeing how completely the seemingly wanton expenditure had been justified in the event. He might, however, derive some wry satisfaction from learning that the road has now become inadequate for its traffic, and that a scheme for widening it and providing a second carriageway—again at the public expense, of course, and a target for remarks not unlike his own—has already been prepared and partly carried out.

Now that we have surveyed the powers which enable the engineer to plan a road system effectively, and some of the principles by which our work must be guided, let us see how they are being put into practice.

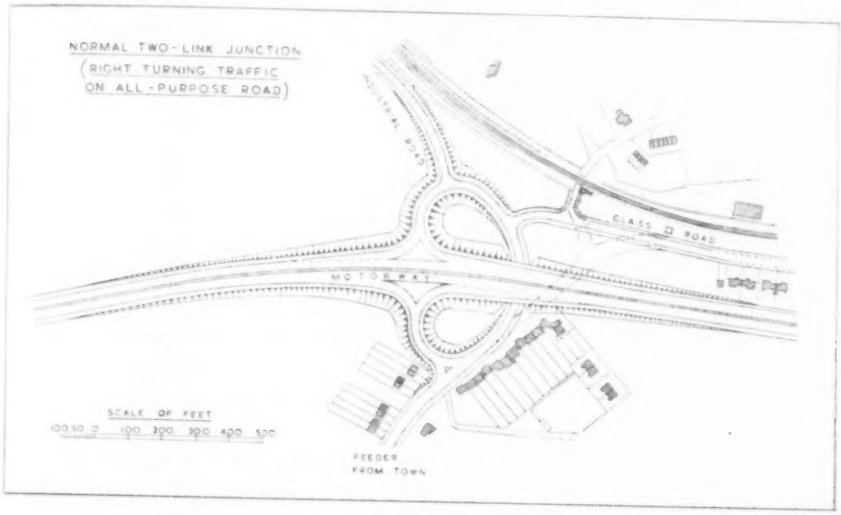

FIGURE 6

After the first trunk roads were established, talk of motor-ways was in the air and, anticipating the legislation which was to make such roads possible, the County Surveyors' Society prepared in 1938 a diagrammatic plan for a system of motor-ways for England and Wales. This comprised a number of roads radiating from London with tangential roads connecting them and branching off to other important centres. The total length of these roads was about one thousand miles and the plan with a memorandum was submitted to the Ministry of Transport. It is interesting to notice that the initial motor-way proposals which were announced by the Government last February exhibit evidence of having been strongly influenced by the County Surveyors' Society's proposals of 17 years earlier. No doubt the initial motor-ways announced last February will presently be followed by others, so as to make a nation-wide system of roads catering for fast long-distance traffic, such as contemplated in the Society's plan.

Valuable as the long-distance motor-ways will be, much will remain to be done for the areas lying between, or not served by them, and for traffic employed on shorter hauls. The duty of planning for these needs falls largely upon the counties. In Kent, for instance, the County Surveyor was instructed in 1944 to report on:

(i) The existing road facilities in the county;

(ii) the traffic requirements indicating the extent to which the existing road facilities were adequate or inadequate; and

(iii) recommendations for the road works necessary to meet traffic requirements.

The outcome of the exhaustive investigation which took place was a County Road Plan. Numerous individual road schemes, each designed to solve a particular traffic problem, had been prepared during the previous twenty years but, owing first to the national financial crisis in 1931 and then to the outbreak of war in 1939, had not been constructed. The Greater London Plan, which had just been published, proposed a number of new roads in the metropolitan part of the county. All these proposals were re-examined, and for the first time those which were retained were welded into one comprehensive plan for the county as a whole. It demonstrated that to provide adequately for the traffic of the time and as far into the future as could reasonably be predicted, 167 miles of dual-carriageway roads would be needed and 428 miles of single-carriageway roads, together with the widening of about 100 miles of rural roads. The plan did not touch minor roads of purely local usefulness, yet a rough estimate of the cost, at the prices ruling at the time, was £40,000,000.

The plan does not attempt to show the precise routes of the roads which it proposes: as far as they are concerned it is no more than a diagram. We will now turn our attention to a particular component of the plan and look shortly at the process of determining the precise route. Although each type of component —new route, bypass, and so on—presents problems peculiar to its type, and each individual project presents problems peculiar to itself, we will choose a bypass because it is perhaps the type most frequently encountered and because it is reasonably representative.

If the object of the bypass is to divert through traffic from a large town an origin and destination survey will probably be made. For the purpose of including the bypass in the plan, the lessons of experience will have afforded a fairly reliable guide to the proportion of traffic which can be diverted. The 'bypassability', as I am afraid it is usually called, of a town varies more or less in inverse proportion to its size. A moment's reflection will show that almost the whole of the traffic can be diverted from a small village, whereas a big town is either the beginning or end of many journeys, or an essential stop for a considerable proportion of the traffic. There is no need to describe here how the origin and destination survey is conducted; it is enough to say that it will give reliable figures of the volume of traffic which will use the bypass, thereby determining the capacity for which the bypass will be designed, and it will give a guide to what connections will be necessary between the bypass and the existing road system.

Tentative—very tentative—points for the beginning and end of the bypass are now chosen. The natural inclination is to keep them as near the town as possible so as to keep down the length of the bypass and consequently its cost and the time needed for construction. The choice is, however, influenced by other factors among which I may mention the need for leaving room for the town to expand; the alignment and capacity of the road outside the terminals; and the suitability of the ground configuration for the type of terminal junction—that is, whether it is to be a normal junction, a roundabout, or a more or less complicated flyover.

Contoured up-to-date maps, supplemented by ground reconnaissance, will show several possible lines, one of which will probably look more promising than the others. If, however, the route is a long one, and particularly if it traverses thickly wooded country, or country which for any other reasons is difficult to reconnoitre effectively on the ground, it may be economical to have an air survey flown, and perhaps even, as has sometimes been done, to have a relief model made from it.

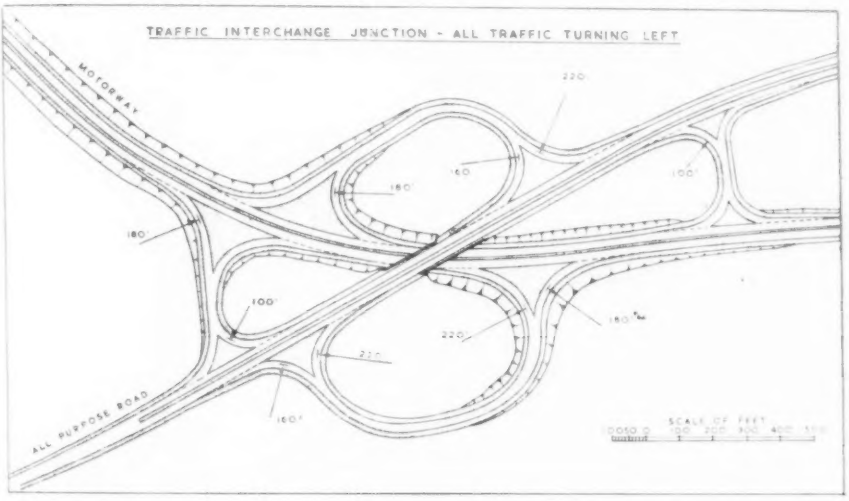

FIGURE 7

Left to himself, the engineer would now have little difficulty in establishing a satisfactory line. He would examine the several routes as closely as possible on paper, would survey the chosen one on the ground, and would proceed with his engineering design. He would, of course, encounter numerous engineering problems, but it is to overcoming problems of that nature that his training and experience have been devoted. What actually happens is that he is nearly always confronted with innumerable conflicting requirements: severance of farm lands; depreciation of valuable residential properties; absorption of land of particularly high agricultural value; the list is endless and its items have one

thing in common: they are almost always inimical to the fundamental engineering and traffic requirements by which the engineer is bound. If the objections are substantiated the engineer must modify his route, or investigate alternative routes until he finds one to which objections are not so strong that they cannot be overruled. The route finally adopted may be longer than his original choice, it may cost more to construct, but one thing it must not do, it must not sacrifice those fundamental requirements which must be satisfied if the road is to carry, safely and speedily, the traffic for which it is needed.

It would be reasonable to expect that, when a road proposal had been approved by all the authorities concerned, it could safely be pigeon-holed until money and resources were available for its construction. That is not so. If a scheme is pigeon-holed for more than a very few years it is most unlikely that it can be brought out and put into construction without more or less drastic alterations, some of which are needed to keep pace with advances in engineering technique, and others which are the result of changes in policy ranging from food production to the previously unforeseen expansion of centres of population.

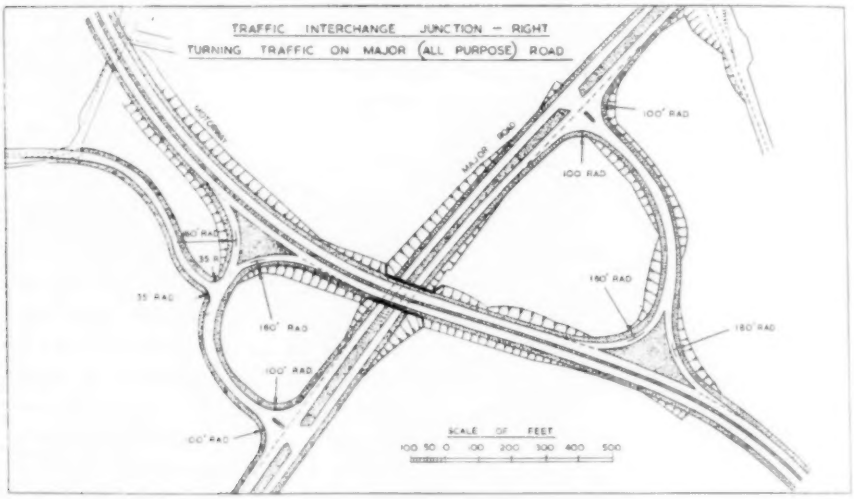

FIGURE 8

A road is an expensive thing to make, and once made, may survive for centuries. How far ahead can we safely look? Are we planning our roads on the right lines now? What are likely to be the future trends? These questions must exercise the minds of anyone connected with the subject, yet there comes a feeling of unsureness when a time more remote than twenty or thirty years is contemplated. One thing is certain: barring a catastrophe such as another world war, technical advances in all forms of transport will continue, and in particular power will be available for speeds greatly in excess of those of to-day—and already the 'Family Ten' is expected to be able to do its mile a minute and at least one production

model can attain twice that speed. How are mechanical advances going to affect our roads?

Probably, for about the next generation, the trend will be just a development of the most advanced present-day practice, that is, complete segregation by means of dual-carriageway one-purpose motor roads, connected to lesser roads only at long intervals and then by way of elaborate multi-level junctions. As more and more power, and consequently speed, become available it may not be long before they outstrip the power of the human brain and muscles to control them safely within the narrow limits imposed by any practical road. Doctor Glanville, in one of his Cantor lectures last year, ventured a prediction that a speed limit for non-built up areas might eventually become desirable. He mentioned that on the Pennsylvania Turnpike, with dual carriageways, speed limits of 60 m.p.h. for private cars and 45 m.p.h. for commercial vehicles had recently been fixed. No doubt a speed limit would answer for a time, but when generally available speeds become much in excess of the legal speed limit, it will probably not be long before the limit has to be raised or abolished. It has happened before. In 1903 the man with the red flag had to give way to a 20 m.p.h. limit and in 1930 the general 20 m.p.h. limit was abolished. What will happen when the limit of 60 m.p.h. or whatever speed may be fixed, becomes intolerable? Multiple carriageways—four, six, eight perhaps, instead of two are an obvious answer. But already the necessity of conserving land for agriculture is an obstacle to road construction, so on present trends roads occupying a greater area of land may not be acceptable. Already solutions for dealing with this distant problem have been put forward semi-seriously: a road structure built over our railways is one, multidecker roads another. Their own authors have described them as Wellsian—yet do not the accomplished facts of radar, television and guided rockets equally deserve that description, not to mention the outstanding example in civil engineering, Mulberry Harbour?

An even more startling picture of future road traffic has recently been suggested to me—a picture of vehicles travelling at speeds too high for direct human control, controlled with infallible safety by electronic devices. Also we can hardly ignore the possibility that air transport, by helicopter or some other form of vertical take off and landing, may develop as rapidly and as widely as surface travel developed in the first half of this century, so that road traffic may presently reach its peak and then begin to dwindle.

But, however diverting such speculative lines of thought may be, I must not let what was intended to be a paper on road planning as practised, wander into these realms of pure guesswork and fantasy where, in face of what has already come about, neither prediction nor ridicule can be safe.

Acknowledgment

The Author wishes to acknowledge with many thanks the valuable help given in the preparation of this Paper by a member of his staff, Mr. H. V. Pitman, B.Sc., A.M.I.C.E., Principal Assistant (Planning).

DISCUSSION

MR. A. J. LYDDON, C.B.E.: Having had some connection with the Ministry of Transport in the past, I should like to ask Mr. Vallis one or two questions.

The first concerns the one hundred per cent intersections with one hundred per cent safety, and the enormous amount of land involved. Was not Mr. Vallis a little conservative in the estimate he gave—about 15 acres? My computation some time ago was for complete segregation, and required something of the order of 20 to 22 acres. Cost is a factor that practical engineers have always to bear in mind. With these complete intersections, apart from the amount of land that is occupied, cost is quite a formidable point, whether there is complete segregation of the traffic or a partial one.

I was glad that the lecturer touched upon the question of to what extent, in planning a new road, it is necessary to provide for the future. I had something to do with London's early arterial roads, and a good deal, of course, depended on the education of public opinion. To talk 25 or 50 years ago of making roads 120 feet wide seemed too visionary. Now 120 feet would be regarded as inadequate.

I rather hoped he would emphasize the desirability of the authorities having the power to acquire land in advance of requirements, either for new roads, or for widening existing ones. This seems to be the principal delaying factor in the execution of work to-day. Could not the period required to execute a road improvement be shortened?

When new road construction in London was married to unemployment, means were found by which it was possible to begin the work first and talk about land acquisition afterwards. That arrangement did lead to rapidity of execution, but these roads were not necessarily built where they were really required for traffic purposes.

BRIGADIER J. L. P. MACNAIR: Regarding the alignment of roads, it is possible for one part of a road to be higher than another. There is nothing new in that. One has only to call to mind Stane Street which was built 2,000 years ago, and which was obviously designed with a higher part in the middle for fast moving traffic and two lower sections, one on each side for slower and local traffic. This construction holds for nearly the whole length of the road from London to Chichester. The labour involved must have been immense.

The other point that I wanted to bring out, and which I had hoped that the lecturer would have made a little more of, concerns the economics of the matter, because this is connected with the question of why this frightful speed is needed. Helicopters would be quite good enough for getting the ordinary individual from one place to another quickly, but not for dealing with heavy industrial traffic, which surely is the whole basis of the problem. What is the average haulage link? Let us call it an average of 200 miles, and take the average speed of a delivery vehicle as twenty miles per hour. If this is increased to forty miles per hour, what is the effect? A twenty mile per hour haul for an average of 200 miles takes ten hours. Speed up the haul to forty miles per hour, and it takes five hours. Allowing an eight hour day, at twenty miles per hour, the lorry could not complete its outward journey in one day. It would stop on the way, arrive at its destination on the second day, unload, and probably return part way—a total of three days. At forty miles an hour, only two days at most would be taken on the job. This would result in a total saving of one lorry in three. Supposing we give as the number of lorries in the country the approximate figure of 500,000. On that basis the firms engaged in the export trade would be saved 166,000 lorries straight away, once the new roads were completed. Giving the approximate value of a lorry as £2,000, the total amount available for roads would be over £332 million. Not a bad sum. After all, the taxpayer is going to be asked to put up well over £1,000 million for the railways, which are a rather

out-of-date form of transport. How is that £332 million to be collected? If industry is going to benefit from these roads, it should, by some means or other, be expected to contribute to them.

MR. C. NEEDHAM: When Mr. Vallis was describing methods for the disposal of surface water from trunk roads, he gave me the impression that he disliked disposal by means of soakaways.

There are many of us who live in districts where a large part of the amenities arise from springs, and unless we can see to it that as much water is allowed to go into the ground as possible, we should lose our amenities by the drying up of the springs. The water is conveyed to the water courses through pipes in a matter of minutes instead of a matter of hours or even days or months, and it has a very serious effect, particularly in areas which are very near to London where a vast amount of underground pumping takes place. We do earnestly hope that where conditions are favourable, disposal by means of soakaways will be adopted.

MR. JAMES W. R. ADAMS, O.B.E.: I think that engineers, landscape architects and planners will agree, on paper at any rate, on the desirability of parkway treatment, of having strips of land included in the design of a highway. There seems, however, to be a breakdown when it comes to the question of who is to own and maintain these pleasant features. How would the lecturer suggest that this difficult problem might be solved?

The frustration that road engineers and others feel about the difficulty of overcoming public objection to proposals, and the constant friction between landowners and others, and the planners of roads, is partly due to the individual's sense of injustice, the feeling that people's property is being affected by lines on maps. Where there is a genuine case of a person being unable to sell a house, I feel that there is a very strong argument in favour of a highway authority being forced to buy the property at once. There seems to me to be a special case for a change in the present practice.

MR. G. VIVIAN DAVIES: As a member of the motoring public, it seems to me fantastic that the Ministry of Transport and various local authorities have not taken power to acquire land compulsorily as it is required for road improvements. There appears to be a tremendous difference in the powers which they possess and those of the London County Council. We have seen the L.C.C. put up mammouth blocks of flats at Wimbledon and Roehampton regardless of the wishes of the residents there and, incidentally I believe, regardless of the provisions of the Town and County Planning Act. They would no doubt have been unable to override the latter but for the fact that a Socialist Government was in power at the time. They seem able to do these things, yet we must suffer inadequate roads and are told that we must do so because the land cannot be acquired. We still live with Notting Hill Gate, with Staines, and with places like Redbourn on the Great North Road; before anything is done we shall all be dead and buried.

Many accidents have been avoided by the provision of non-skid roads, better road surfaces, and by minor road improvements such as cutting out dangerous corners and the provision of cat's eyes in the roads. This is only tinkering with the problem, however. It amazes me, travelling around the country as I do, to find an excellent dual carriageway which suddenly ends, becoming an ordinary type of road, and yet alongside are very wide verges. It seems as though the people planning these roads have suddenly got tired. There is a dual carriageway, for instance, right up to Park Royal on Western Avenue. Then, all of a sudden, it dwindles off leaving a bottleneck. Why on earth cannot the wide verge be taken in, and the dual carriageway continued?

Industry has been contributing vast sums of money for many years to the cost of

roads, so have the motorists, and precious little has returned by way of road improvements. It seems to require a major catastrophe for anything to be done. Although I do not want to travel at high speed, I do object to the fact that I can travel in reasonable comfort on a main road, and am then suddenly landed in a traffic jam caused by a bottleneck. It is these traffic jams that should be eliminated first.

There is far too much heavy traffic on our roads to-day, because it is not realized that railways can carry this kind of traffic very well. During the bad weather a year or two ago, when some of the roads in the North were snow bound, I had to look around for other means of sending heavy plant, weighing more than ten tons. I discovered that the railways could handle this as easily and as cheaply as the road hauliers could.

THE LECTURER: I should like to thank Mr. Lyddon for his kind remarks and observations. I agree with him about the land. The figure I quoted was perhaps on the conservative side, but each design differs greatly from another. One kind of layout may take 10 acres, another may take 25 or perhaps 30 acres if it is a very elaborate one.

There is power, of course, to acquire land compulsorily as Mr. Lyddon will know, but though the power is there it does take some time, as we in this country do not like to go at things in too thrusting a way. I believe we are more patient in acquiring land than are authorities in other countries, although we have the powers. This country is very highly developed, of course, and although land can be taken compulsorily, there are many other matters to consider.

The next speaker referred to the alignment of roads, and mentioned Stane Street. I do not know Stane Street, but I agree with him that when possible roads should be placed on different levels rather than make a scar across the landscape as they often do. It improves the landscape, and it certainly improves it for road users, because it often opens up views which they otherwise would not have.

I am afraid I could not deal with economics in the time available. Industry has for many years been paying heavily for roads which have not been provided. They have been paying much more than the Exchequer has been handing out in grants for road construction. The question of toll-roads has been considered, but I am not sure that it is not still being considered by the Government. If toll-roads do come about, then I am afraid that industry will again pay heavily for the use of motor roads.

Mr. Needham spoke about soakaways. I was really comparing them with watercourses. From my experience of soakaways, and it is quite a wide experience, in some cases they are all right, but so often the sides get silted up and they have to be cleaned, and much expense has to be undertaken to get them into such a condition that the water does in fact continually soak away. I quite agree with him that all the surface water that flows on to the ground should as far as possible be conserved. I think that the more water that is put into streams, and the more streams are cleaned allowing the water to get more quickly away to the sea, the more water we are losing for our own domestic purposes.

I should also like to thank Mr. Adams for his kind remarks. We have often spoken about parkway treatment, because it is a somewhat vexed question. Mr. Adams is, of course, keen on parkway treatment as a planner. I also am most keen on it as a road engineer. Here again it is largely a question of economics. Where these new roads that I have spoken about are being planned, they are nearly always trunk roads, and the view taken by the Ministry of Transport is that parkway treatment should, where possible, be taken advantage of, but by way of planning powers. The Ministry is somewhat reluctant to make grants available for the purchase of additional land in order to effect parkway treatment, but I can assure Mr. Adams that I am wholly in agreement with him that where possible it should be done.

I entirely agree with Mr. Adams that the difficulty of property affected by planning proposals is a very great one, especially where roads are in projected development

plans for construction in twenty or thirty years' time. I have had experience quite recently of this. The person has unfortunately a property which is in the line of a road which he knows will not be constructed for many years. Because the property will be affected by this road, which is at present on paper only, people will not, or are most reluctant to, buy it. Building societies are most reluctant to advance money in these cases also. I agree with Mr. Adams that the highway authorities should have power to purchase in those cases where they are satisfied that the road will be built in the future. I think it is only fair on the property owner that his property should be taken from him by the highway authority at a proper price.

On the question of bottlenecks, I think we will all agree that there again it is a matter of cost. The road was planned and the land probably bought before the war, and when the war came there was a shut-down on all expenditure of this kind, and the rest of the road has never been built. The land is still there. We have it in Kent and in many other places. The land has been fenced off, but we have no funds, and the Government has not made any funds available to complete these works. I think the majority of highway authorities are alive to the problem and are only too anxious to solve it. One example I can give you is the Great North Road through Huntingdonshire. It has been waiting to be improved for years.

I should like to take this opportunity, Mr. Chairman, of thanking the Council of the Royal Society of Arts for so kindly inviting me to read this paper. It has been a pleasure to do so, and I regard it as a great privilege.

THE CHAIRMAN: I can think of one case of a London street which needs widening and where this has taken far longer to execute than to plan. This is what is called the Strand Improvement Widening Scheme. I saw it started 55 years ago, and it is not finished yet.

We are very grateful to Mr. Vallis for this broad outline in his paper on the subject of planning and construction of roads, and I would like to propose a very hearty vote of thanks to him.

The vote of thanks to the Lecturer was carried with acclamation, and the meeting then ended.

GENERAL NOTES

IMPRESSIONS OF THE EDINBURGH FESTIVAL

This summer's Festival in Edinburgh, the last under Mr. Ian Hunter's direction, preserves very much the pattern of its predecessors. Is there something a little stolid, a little provincial, about some of its fringe offerings? Surveying the sparse array of flags hung out this time in Princes Street, clambering over decorators' buckets and boards in one of Edinburgh's principal hotels several days after the official opening, does one detect a grain of truth in some wag's aside that what this Festival really needs is a pinch of Salzburg? In truth, the cynic could be as ironical in Edinburgh *en fête* as anywhere else; and Londoners who are, after all, not so good at opening their own much publicised exhibitions on time, might reflect, more suitably, on the Festival's excellent and varied programme.

I cannot conceive that the mixed critical reception accorded to Mr. Thornton Wilder's play *A Life in the Sun*—the main dramatic novelty devised for the apron stage of the Assembly Hall—has perturbed the author in the very least. The most ebullient personality I ever met, he entertained me for a couple of hours in his room at the North British hotel, spilling whisky at intervals into our iced glasses, darting with incredible agility to the door to welcome his two or three other guests, and with an intellect not a whit less agile discoursing on Renaissance drawings, Gertrude Stein, Lope de Vega, Salzburg—every topic that arose, with a singular, frequently

memorable comment to make on each. To watch him was no less fascinating than to listen to his rapid, swooping utterances, punctuated with chuckles, and accompanied always by quick, expressive movements of the body. When, a quarter of a century ago, Wilder called on his London publisher to discuss *The Bridge of San Luis Rey*—a novel that turned out to be a landmark of serious literature—he had seemed to me then like a smooth brown owl, the round horn-rimmed spectacles enhancing the effect. Now, observing him at the N.B., leaping up to replenish the whisky, shaking with mirth at a guest's impersonation of a Shakespearean player vainly trying to raise a laugh out of the stilted word-play of a clown, Wilder reminded one irresistibly of Tenniel's drawing of the Mock Turtle in *Alice*, an exceedingly attentive turtle who listened quite as admirably as he talked.

The curtain was due to rise in an hour's time on the opening night, and one asked Wilder if he felt at all apprehensive. Characteristically he sidled away from so direct a question, and countered with a reminiscence. Gertrude Stein, he recalled, had believed strongly that an artist's only duty was to himself; his audience's response mattered nothing. If the artist preached or taught (she further held) he compromised his integrity. To be incorruptible, to preserve his shrine inviolate, he must be utterly oblivious to any consideration whatever outside himself. In that case, we suggested after a pause, Gertrude Stein would never have allowed that Ibsen or Shaw were genuine artists; and our host agreed that the tenet was too puritanical.

While this remarkable playwright remains the principal subject of discussion in Edinburgh, there have been other things of interest in the Festival Theatre. Chiefly the honours have gone to the Old Vic's production of *Julius Cæsar*, with Mr. John Neville, Mr. Paul Rogers, and Miss Wendy Hiller taking the Lyceum stage. But the *Hedda Gabler* of Miss Sonia Dresdel is said to be a distinguished performance, and at the Palladium may be discovered both Mr. Alexander Reid's satirical piece, *The World's Wonder*, and a capital *Late Night Revue*. Nor has the musical programme so far seemed to fall below the exacting standard or depart noticeably from the pattern set by its predecessors, with the Berlin Philharmonic opening at the Usher Hall, and the Glyndebourne Opera memorably presenting Verdi's *Falstaff* under the direction of Carl Ebert at the King's. For those milling, polyglot thousands anxious to savour everything (Americans, particularly, are here in force) there is also the Royal Danish Ballet Company making its first appearance in the capital at the Empire Theatre—Denmark, in addition, contributing notably to the Film Festival with *The Day Came*, a film concerned with the Danish Resistance.

So far as the art exhibitions are concerned, their traditional Franco-Scottish character at this season is preserved not only in the Gauguin collection set amid the exhibits of the Scottish Academy. Over at the Museum, for instance, has been gathered a fine assemblage of maces and ceremonial plate by early French and Scottish craftsmen, with recent examples as distinguished as those by Mr. Alan Place, and Mr. C. d'O. Pilkington Jackson, a Fellow of this Society whose mace for the Medical School reflects the same refinement and research as his more elaborate mace for Singapore. Then, again, the National Gallery is accommodating the Ellesmere Poussins of *The Seven Sacraments*, an impressively solemn series completed in 1648; while a choice collection of French Impressionist and Post-Impressionist paintings has been transferred from Glasgow to the Arts Council Galleries at 11 Rothesay Terrace. Nor should be overlooked such fringe exhibitions as the paintings by six youngish Scots led by Miss Joan Eardley at Aitken Dott's, or the recent sculptures by Benno Schotz at Doig, Wilson and Wheattey's.

There is no space to dwell at length on the main artistic offering, the sixty and more Gauguin paintings, with sculptures, engravings, and the Tahitian manuscript *Ancien Culte Mahorie*, gathered and valuably catalogued by Mr. Douglas Cooper for the Festival Society and Arts Council. It should be said at once, however, that this is the first major exhibition of Gauguin's art to be seen in Great Britain; and if the artist's

later periods are not represented quite as fully as Mr. Cooper would like, this collection mainly drawn from American and European museums is nevertheless rich in Gauguin's early impressionist and Breton paintings.

Paul Gauguin was, of course, a consummate example of Gertrude Stein's completely dedicated artist. No doubt he was a consummate cad also. But having deliberately deserted his wife and four young children, Gauguin made no concessions to himself. Surveying his later work in the exhibition, it is, indeed, difficult to dismiss from the mind the gaunt figure haunted by penury, physically wrecked, attempting suicide, and yet strangely, before the end, foreseeing the great influence on future art of this 'new-won freedom' of his painting, even if he could scarcely foresee the fantastic sums his work would one day realize. There, presently due to come to the Tate, is part of the harvest of those years in France and Denmark, in Martinique, Tahiti and the Marquesas Islands: impressionist landscapes, visions of Brittany, portraits, still-life, and those haunting, decorative images he made his own. Of all the experiences that Edinburgh has offered in these weeks, none, perhaps, has been more stirring than this.

NEVILE WALLIS

ART COMPETITION

The trade publication *Ingot* is offering prizes ranging from £50 to £150 for the best paintings in any medium on the theme 'industrial Britain'. A selection of the paintings will be exhibited in London and the provinces, and may be for sale. Each competitor must submit two entries, and these should be accompanied by a copy of the specially prepared schedule. Applications for schedules, which also give the full conditions of entry, should be made before 17th September, 1955, to the Art Exhibition Bureau, 23 Albemarle Street, London, W.1.

BUILDING CENTRE FILM SHOWS

The fourth season of lunchtime film shows at the Building Centre commences on 7th September with two films entitled *Development of the English Town* and *Planned Town*. The film shows, which start at 12.45 p.m., are held weekly and seats may be reserved by applying for tickets to the Director, 26 Store Street, W.C.1.

CORRESPONDENCE

ORIGIN OF 'BRAINS TRUST'

From MR. JOHN GLOAG, HON.A.R.I.B.A., 3 THE MALL, EAST SHEEN, S.W.14.

Although it seems ungracious to complain about the generous review of *The American Nation* in your issue of August 19th, I must correct the statement that the 'Brains Trust' was originated by the wartime B.B.C. The term and the idea of an advisory team became popular in the United States during Franklin Roosevelt's first campaign and after his inauguration, when he was surrounded by a group of intelligent, non-political advisers from the universities. I was in the United States in 1934 and constantly heard the phrase in conversation and read it in newspapers, variously rendered as 'Brain' and 'Brains Trust'. Even Democrats were a little suspicious of the innovation it represented: as for Republicans, they dismissed the 'Brains Trust' as a 'bunch of crackpots'. The Democrats' reply to this was that the Republicans might have thought of it 'if they'd had any brains or any trust!'

NOTES ON BOOKS

THE PENROSE ANNUAL, 1955. *Edited by R. B. Fishenden. Lund Humphries.* 30*s*

In these days, when we are constantly being reminded of the ever-increasing impetus of technological advance which makes this necessarily an age of specialization, it is remarkable to realize that although the *Penrose Annual* began in 1895, as a purely technical publication under the title *Process Year Book: Penrose's Pictorial Annual*, it became, and remains to-day, to quote its sub-title, *A Review of the Graphic Arts* in the widest sense, containing general articles on design, illustration and æsthetics, as well as articles on technical processes. Part of the stimulus which one can receive from these yearly volumes lies, therefore, in the reminder provided by the contents as a whole of the extent, in the field of printing, of the interaction between art and technics: indeed, in that interaction lies some of the fascination of printing.

These general notions apart, the real meat of the *Annual* is, of course, in its articles and illustrations. Mr. Richard Guyatt, Professor of Graphic Design at the Royal College of Art, opens with an extremely interesting essay on 'The Marriage of Content and Form', which brings one's mind to a consideration of the creative element in printing. It is perhaps all too easy to become starry-eyed over the 'art of printing' and 'art and industry' without a full consideration of the basis on which art can be present at all in processes of multiplication. Here immediately is a corrective. Mr. Guyatt goes on, 'The mind of an artist attuned only to trivial concepts . . . becomes encased in a technical facility, which is his self-made prison'. There must be union of the idea and the technique, to give birth to art. The illustrations are from subjects as seemingly diverse as a Bawden London Transport poster and a Tenniel illustration to *Alice in Wonderland*.

In the next article, 'Entente Cordiale', Mr. Charles Rosner makes the point that the French publisher is a patron of the arts, with a greater adventurousness than his English counterpart in the commissioning of book-illustration. The French, he feels, are on the whole more spontaneous and extravert, while the British for centuries have been specialists. The illustrations are of work by Clavé, Vertès, Chagall, and Savignac, among others. As if to disprove in the most emphatic fashion Mr. Rosner's suggestions on the British character the following article, by Mr. James Laver, is on Lovat Fraser, and is illustrated in the frontispiece and in four other pages by coloured sketches from Fraser's own sketch-books. But Mr. Fraser died 34 years ago. The delightful spontaneity and freshness of these sketches is well reproduced by offset-lithography.

In an historical article, Mr. W. Turner Berry and Mr. George Buday write on 'Some Nineteenth Century Broadsheets'. Some full-blooded typography is seen, in tracts for not too squeamish times.

On the subject of lettering, Mr. Arnold Bank, who has been lecturing at the Royal College of Art as a Senior Fulbright Fellow, gives some thoughts on the evolution of present freer styles and on the practice of lettering in agencies to-day. Mr. Walter Tracy then questions, 'Why should Lettering be neglected?'. Why, indeed? Is it possibly an un-British activity? With these two articles this year's *Penrose* shows its faith that, as Mr. Tracy says, there can be, if the patron and the artist will provide it, 'noble lettering, vigorous and even gay lettering', and this without implying a discontent with type.

Mr. Paul A. Bennett contributes an appreciation of Will Bradley, now 86, 'the dean of American Typographers', who, in the words of Walter Dorwin Teague, 'romped like a breeze through American graphic arts for several decades'. In an article by the late John Buckland-Wright on 'Burin engraving on metal and wood', we have a link with Mr. Guyatt's opening article, since Mr. Buckland-Wright's theme

is the decline and resurrection of Burin engraving due to the changing appreciation of the medium. Mr. Charles Batey writes on 'British Transport Hotel Printing', and permits himself the tempting but surely outrageous pun 'restauration' in describing the great change that has been made in this field.

There are two articles directly bearing on the subject of education in the graphic arts, one by Mr. Frank Jessup on 'Book-Production at Maidstone College of Art', and the other by Mr. G. F. Smith on 'New Horizons for Printing Education'. The first stresses the necessity of a good technical background for the book designer, together with the capacity for visualizing the process of book-making as a whole. Mr. Smith, writing in the technical section, is concerned with the lack of printing education above the craft level and the need for the teaching of applied science throughout technical courses.

Mr. John Dreyfus opens his article on 'New Types from Klingspor and Bauer', with a reference to Cobden Sanderson's Thames type-casting activities, but finds these German foundries too vigorous to have time for such tragic neuroses. Mr. Dreyfus wonders, however, how many of these German designs will travel. On this same subject of type-design Mr. Will Carter provides an appreciation of Monotype Spectrum, designed by Mr. Van Krimpen, and until now only available for case, while Mr. Allen Hutt writes on Linotype's new newspaper face, Jubilee.

Advertising is represented by an article on 'Company Handwriting', in which Mr. Ashley Havinden writes most interestingly on his evolution of the famous graphic styles associated with KLM, Simpson's of Piccadilly, and Liberty's, and by an article by Mr. Frederick A. Horn on 'The Picture and Press Advertising'. Mr. Horn advocates a reconsideration of the feats of schedule-keeping required by all concerned in the production of an advertisement, and he reproduces examples of art work reproduced by line or half-tone or quarter-tone from originals in various techniques.

Three articles on photography follow. The first article, 'Art and Photography', is by Sir Kenneth Clark, and is condensed from a Centenary Lecture read before the Royal Photographic Society in 1953. Some of the reproductions accompanying this article are, to one unfamiliar with them, among the most impressive in the Annual; these are the photographs by David Octavius Hill. To the question, is photography an art? Sir Kenneth's short answer is 'Yes, but an incomplete one', for the reason that if it is true to its own nature it is largely a purveyor of raw material and 'the element of transforming in the doing' is lacking. With this in mind, it is particularly relevant to turn to the next article, a personal tribute to the late Werner Bischof, by Mr. Charles Rosner. This is accompanied by eight pages of photographs. Degas, Sir Kenneth Clark has just reminded us, realized something of the particular qualities of the camera, and one thinks immediately of Paul Nash and his Kodak No. 2. Both these, however, were painters first and foremost, while Bischof's means of expression were solely the lens and sensitized paper. Finally, in this group, Mr. John Parsons writes on 'Fashions in Fashion Photography', where he feels that the trend is towards a 'more gentle and relaxed mood', away from the 'artificial and bizarre'.

The General Articles end with 'An Artist's Thoughts on Screen Printing', in which Mr. R. M. Lander describes how a poster which he had designed for reproduction by offset-lithography was in fact printed by silk-screen. A silk-screened miniature of the poster illustrates the article.

In writing of the technical articles one can only attempt to pick out certain general trends. This year there has been some important progress made in fields related to photo-typesetting, which may help to ensure that the development of this new technique will not lower too much the visual quality of printed matter. Particularly relevant are 'The Dow Method for Etching Magnesium', by John A. Easley, 'The A.N.P.A. Modification of the Dow Process', by C. M. Flint and 'Production by Relief (Dry) Offset', by E. W. Thomas, since these processes are based on the use of

photographic originals. All these contributions are from the U.S.A. Other important developments are in the field of electronic engraving, where the Scan-a-graver and the Klischograph are now in regular commercial use, and have already made possible a cheaper coarse-screen half-tone. A new machine described is the Elgramma from Switzerland, which uses lines instead of dots in the half-tone structure. As always, Mr. Fishenden's Editorial Commentary fills in the background of the year's progress in technical research. He writes a very interesting if disturbing section in which he praises the work of Patra, but shows how little we in Britain are collectively research minded compared with the U.S.A.

The *Annual* this year has been crisply designed by Mr. Leslie Unwin. The type used is Monotype Bodoni No. 3. One feels that the placing of the running heads at the foot of the page is not entirely successful, particularly as where one falls opposite an illustration it can appear at first sight to be the caption. The jacket makes use of a relatively new technique, lamination with Clarifoil film by the Celloglas process. At 30*s.* the book is, as always, a bargain. In seeking to sum up, one recalls that when *Penrose* was last reviewed in this *Journal*, in 1953, Mr. Seán Jennett characterized that issue as exceptional. And so is this one.

MICHAEL OLIVER

FROM THE JOURNAL OF 1855

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WANDSWORTH TRADE SCHOOL

A report has just been issued of the proceedings of an experimental Trade School, lately founded at Wandsworth by the Rev. Dr. Booth, F.R.S., Chairman of Council of the Society of Arts, which has excited much curiosity amongst those interested in new educational schemes. The object of the present school is to provide instruction for the children of artisans and small tradesmen in the knowledge of common things, that may be turned to practical usefulness in after life. By the payment of eightpence or a shilling a week, children are taught a little of mechanics and chemistry, and the use of the steam engine, along with geography, history and arithmetic, and their bearings in relation to trade. The school during its first quarter had an average attendance of about twenty-six boys, but owing to the incompetency of the master first selected, the number had considerably fallen. A new master was then chosen, Mr. Robert Marks, late a pupil of the Highbury Training College, and the holder of a first-class certificate from the Committee of the Privy Council on Education, and with the assistance of Mr. Buckmaster, of the Government School of Mines, and an able drawing master, Mr. Lanchenik, considerable improvement has taken place, and the number of pupils has risen to fifty-eight. The school is attended equally by the sons of churchmen and dissenters, and the Committee of Management are extremely sanguine in the ultimate success of their experiment, concluding their report with warm expressions of the deep thankfulness they feel at the success of a school intended to provide for the educational wants of such large and influential classes as those which comprise the skilled artisans and small tradesmen of the country, classes which hitherto have been altogether overlooked in the educational movement of the last few years, whether made by the state or by private persons. They also express their very decided and deliberate opinion that it is politically unsafe thus wholly to neglect the education of such self-willed and excitable masses. They would gladly see trade schools of this kind established throughout the country, especially in extensive manufacturing localities. If the success of this attempt has been so remarkable in a small place like Wandsworth, still greater might naturally be anticipated among a larger population.

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